# THANAWAT LODKAEW

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[https://skydddoogg.github.io/](https://skydddoogg.github.io/)

## EDUCATION

**King Mongkut's Institute of Technology Ladkrabang (KMITL)** *Graduation year: 2020*
Faculty of Information Technology

- BSc in Information Technology
- Cumulative GPA: 3.76 (4.00 scale)

## EXPERIENCE

**Undergraduate Researcher** Since 2017
*Data Science and Machine Learning Research Laboratory (DSMLR), KMITL*
*Supervised by Prof. Kitsuchart Pasupa*

· Having proposed a new loss function for learning imbalanced data. The proposed loss is a hybridization of two well-performing loss functions, mean false error and focal loss. This is my senior project.
· Having proposed a computer-vision-based approach for heat detection in cows.
· Having proposed an approach for retrieving similar visual objects by utilizing CNN features for similarity measurement and using object-segmented images instead of object-cropped images for better results.

**Research Intern** Summer 2019
*Vision and Learning Laboratory, Vidyasirimedhi Institute of Science and Technology (VISTEC)*
*Supervised by Prof. Supasorn Suwajanakorn*

· Having proposed a deep-learning-based framework for removing furniture objects in a room image. The framework uses an image inpainting technique to perform the task.
· Having contributed to an exciting project related to machine-learning-based framework for human-robot communication.

**Exchange Student** Summer 2018
*National Institute of Technology, Kurume College*
*Supervised by Prof. Yoshimitsu Kuroki*

· Having researched for an improvement of the Saak transform using convex optimization on sparse representation.

## EXTRACURRICULAR ACTIVITY

**Deep Learning and Artificial Intelligence Winter School 2017**
*Organized by The Asia Pacific Neural Network Society (APNNS)*

- Having gained knowledge about several aspects of deep learning and artificial intelligence such as deep CNN neocognitron for artificial vision, randomized algorithms, swarm search and deep learning for emotion.

**Workshop on Introduction to Social Computing**
*Organized by Prof. Irwin King*

- Having gained knowledge about collecting, extracting, accessing, processing, computing and visualizing social signals and information.
- Having had a clear understanding of the fundamentals of recommendation system.

## SELECTED PROJECTS

**Hybrid Loss for Improving Classification Performance with Unbalanced Data**
This is my senior project. The goal of this project is to improve the classification performances of deep neural networks. I explore the ideas behind the mean false error and focal loss ideas, to understand how they perform, when the data is unbalanced. Then, I define a hybrid loss function, a hybrid of mean false error and focal loss solutions, which combines advantages of the two ideas, and I can show that the two loss functions can be combined in an efficient way.
*Tools: Python, Tensorflow*

**FurNet: A Framework for Removing Furniture Objects in Room Image**
This is an object removal task. In this project partial convolutions for image inpainting with pre-trained weight on ImageNet is used to perform the furniture removal task. Technically,to remove furniture objects in an image, a mask image of furniture objects in the image needs to be created first. The mask image and the original image will be fed into the network, and the network will then output the image with no the furniture objects which are represented in the mask image.
*Tools: Python, Tensorflow*
*Link: https: // github. com/ Skydddoogg/ furniture-removal*

**A New Approach to Automatic Heat Detection of Cattle in Video**
This work proposes the use of a set of discriminative features to detect cattle in heat, where the features are extracted from the behaviours of oestrus cow by a key-point analysis of locations of their body parts in a video. To obtain the locations, body part extraction is performed to detect the nose, body, and base of tail of each cow in a video frame. The proposed features are evaluated, in terms of the algorithms classification accuracy of identifying cow in heat, with several machine learning algorithms.
*Tools: Python*
*Link: https: // doi. org/ 10. 1007/ 978-3-030-36802-9_ 35*

**Fashion Finder: A System for Locating Online Stores on Instagram from Product Images**
Fashion Finder is a system that is able to assist in searching for shops on Instagram by using an image of a product item. The system works by first matching a sought-for product with the available products in the system. Then, it will rank the matched products according to their similarity to the actual product and show the most similar ones.
*Tools: Python, Tensorflow, Flask, Vue.js*
*Link: https: // doi. org/ 10. 1109/ ICITEED. 2018. 8534871*

**Foodagram**
Foodagram is a photo-sharing application for sharing food experiences. There are several features that have been conducted for this mobile application whether it be photo sharing, restaurant navigating, people following, post commenting and post liking.
*Tools: Java*
*Link: https: // github. com/ Skydddoogg/ Foodagram*

**Blood Donation Assistant**
Blood Donation Assistant is a system for assisting hospital staff and donor with pre-donation and post-donation modules. This system is separated into two platforms, web application and mobile application. The web application is used by hospital staff for donor registration, donation record and qualification verification processes. Donors use the mobile application for seeing their donation history and for completing their pre-donation qualification form.
*Tools: Java, Python, Flask, Firebase Realtime Database, JavaScript*
*Link: https: // github. com/ Skydddoogg/ Blood-Donation-Process-Assistance-System*

## PUBLICATIONS

1. **Thanawat Lodkaew** and Kitsuchart Pasupa. Hybrid loss for improving classification performance with unbalanced data. In *International Conference on Neural Information Processing*, 2020. (under review)

2. Guntitat Sawadwuthikul, Tanyatep Tothong, **Thanawat Lodkaew**, Jilamika Wongpithayadisai, Puchong Soisudarat, Sarana Nutanong, Poramate Manoonpong, and Nat Dilokthanakul. Visual goal human-robot communication framework for a robot waiter system. *IEEE Transactions on Industrial Informatics*, 2020. (under review)

3. Kitsuchart Pasupa and **Thanawat Lodkaew**. A new approach to automatic heat detection of cattle in video. In *International Conference on Neural Information Processing*, pages 330–337. Springer, 2019.

4. **Thanawat Lodkaew**, Weeruhputt Supsohmboon, Kitsuchart Pasupa, and Chu Kiong Loo. Fashion finder: A system for locating online stores on instagram from product images. In *2018 10th International Conference on Information Technology and Electrical Engineering (ICITEE)*, pages 500–505. IEEE, 2018.

## AWARDS AND HONORS

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| **Third Place,** IST - FR 2019: Gateway to Informatics Research at EECi, *Thailand* | 2019 |
| **Third Place,** National Software Contest on Artificial Intelligence Application, *Thailand* | 2018 |
| **Finalist,** International ICT Innovative Services Contest, *Taiwan* | 2017 |
| **Special Prize Award,** NAPROCK International Programming Contest, *Japan* | 2017 |
| **Finalist,** TechJam Competition on Data Science Squad, *Thailand* | 2017 |
| **Honorable Mention Award,** MUICT DataHack, *Thailand* | 2017 |

## TECHNICAL STRENGTHS

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| **Programming Language** | Python, Java, C, MATLAB, Node.js, HTML/CSS |
| **Technology** | Tensorflow, Keras, PyTorch (preliminary), Linux, Flask, Google Cloud Platform, Git |

## REFERENCES

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